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III. Ventriculus cordis sinister stupendæ magnitudinis, lately communicated to the Royal-Society by James Douglass, M. D. and R. S. S.

I Lately opened a young Man in *St. Bartholomew's Hospital*, that died of the Palpitation of the Heart, whose violent beating and prodigious subsultory Motion, for some Months before his Death, was not only easily felt by laying the Hand on the Region of the Heart; but seen to rise and fall by raising the Bedcloaths that covered it. And, which is almost incredible, at sometimes the trembling and throbbing made such a Noise in his Breast, as plainly could be heard at some Distance from his Bed-side. This was accompanied with frequent *Delliquiums*, sometimes slow, sometimes swift, and often intermitting.

Johannes Fernelius in his *Pathologia* lib. 5. cap. 12. gives us an Observation of a very uncommon and surprising Case of this kind; where he says the frequent Concussion of the Heart was so violent and powerfull, as not only to displace or luxate, but even to break some of the adjoining Ribs.

Franciscus de la Boe Sylvius, another Writer of unquestionable Integrity, has a parallel Observation in his Account of this Disease.

Theodorus Kerkringius relates the History of a Woman he opened, whose Heart was of a prodigious Bigness, in his *Spicilegium Anatomicum*, Obs. 16.

And to mention no more, *Monsieur Dionis*, at the End of his Anatomy, gives a large Description of a very uncommon Case, in which the right Auricle of the Heart was prodigiously dilated to the Bigness of the Head of a new born child.

In the Dissection of this morbid Heart I observed the following remarkable Particulars.

1. That the *Pericardium* or *Capsula Cordis* was very thick and firmly adhered or grew by a fibrous Connexion to all the outer Surface of the Heart.

2. Instead of the Water called *Liquor Pericardii*, there was only in some places about the *Basis* of the Heart a mucilaginous clear Substance like a Gelly.

3. In the right Auricle lay'd open there was nothing preternatural. The ascending and descending *Cava* opened into the same as usual. The *Vestigium* or Mark of the *Foramen ovale* with its semicircular *limbus* was very plain.

And the *Orificium* of the *Vena Cordis Coronaria* was extremely large, yet its Valve was less than usual.

4. In the right Ventricle layed open, the *Valvula* called *tricuspides* were configurate after the usual manner. The sides of this Cavity were thin and full of small fleshy *Columnae* as they commonly are, with great variety of Furrows and little holes. The three *sigmoide* or *semilunar Valves* in the Mouth of the *arteria pulmonalis*, were as they always are in a natural State.

5. The left Auricle was not much bigger than ordinary: but its muscular Appendage, called the *Bulb* of the *Pulmonary Vein* by the late Mr. Comper, was extraordinarily dilated and enlarged beyond any thing that I ever saw.

6. The left Ventricle, whose Capacity in a natural State is always less than the right, was here considerably larger. And if the Experiment had been made, before Dissection, of filling both with any Liquor, this had certainly contained three times more than the other.

7. The *Valvula* called *Mitralis*, placed at the Orifice of this Ventricle, are much thicker in Substance than ordinary; and the two fleshy Columns, called by *Nicolaus Massa*, almost 200 Years ago, *duo parvi muscoli*, which send out

abundance of small Tendons to be inserted into these Valves, were proportionably augmented in Bigness.

8. The *semilunary Valves* in the Mouth of the *Aorta*, or of that great *Vena pulsatilis* that dispenses the Blood to all the several parts of the human Body, were very much preternaturally affected ; as would easily appear upon comparing them with those in the Orifice of the *pulmonary Artery*, in which they are thin and very broad, so as to be able to shut the Cavity of that Vessel, and hinder the Blood from returning back into the Ventricle, and likewise transparent : but in this they are very thick, contracted as it were, and furled together, and of a whitish Colour ; and in all appearance, if the Person had lived longer, they had turned boney or undergone a Petrification.

This uncommon Structure of the Heart being thus demonstrated, let us endeavour to account for the following Phenomena. The first is the Palpitation of the Heart, which was the chief Symptom and Complaint of the sick Person. The second is the preternatural Dilatation and Enlargement of the left Ventricle. It is not improbable but the firm adhesion of the *Capsula Cordis membranacea* to the substance of the Heart, occasioned that uncommon trembling and throbbing thereof : its free and easy Motion being hindered by that thick *involucrum* which surrounded it so close on each side. The learned Dr. Lower, in his elaborate Treatise *de Corde humano* gives us such an instance, and explains the Palpitation after this manner.

As for the second, *viz* the Dilatation of the left Ventricle and muscular Bag of the *Pulmonary Vein* ; that is altogether owing to the ill configuration of the *Valves* we have now described : for as the great Artery or *Aorta* arises out of this Ventricle, it has three Valves which separating give passage to the Blood from the Ventricle into

the Vessel; and in a natural State they shut that Passage, and so prevent the Blood from recoiling into the same, if it should endeavour to return. But in this case, by reason of its contracted Narrowness and Thickness, not being able to close or shut the Passage, the Blood flowd back again into the Cavity, which it had gradually enlarged, and dilated to the Bigness we see. Besides the *Muscular Valves* not being duly qualified for the Performance of their Office, the Blood recoiled into the *Auricle*, which it had distended in the like manner. This constant Regurgitation or Reflux of the Blood is besides sufficient of its self, to produce this extraordinary trembling or *πάλμος καρδίας*, as the *Greeks* call it.

IV. *A ready Description and Quadrature of a Curve of the Third Order, resembling that commonly call'd the Foliate. Communicated by Mr. Abr. de Moivre, F. R. S.*

I Have look'd a little farther into that Curve which fell lately under my consideration. It is not the *Foliate* as I did at first imagine, but I believe it ought not to make a *Species* distinct from it. *AEB* (Fig. 1.) is the Curve I thus describe. Let *AB* and *BK* be perpendicular to each other. From the point *A* draw *AR* cutting *BK* in *R*, and make *RE = BR*, the point *E* belongs to the Curve Draw *BC* making an Angle of 45 grad. with *AB*, this Line *BC* touches the Curve in *B*; from the point *E* draw *ED* perpendicular to *BC*, and calling *BD*, *x*; *DE*, *y*; *AB*, *a*; and making $\sqrt{8aa} = n$, the Equation belonging to that Curve is $x^3 + xxy + xyy + y^3 = nxy$ or $\frac{x^4 - y^4}{x - y} = nxy$ Taking *BG = AB*, and drawing *GP* perpendicular to *BG*, *PG* is an *Asymptote*. In the *Foliate* the